

PATENT CLAIMS

1. Fastening arrangement for a safety belt, comprising a holder (10) that is to be secured to the vehicle, and a connector (11) that is movably disposed, against spring action, on the holder (10) and is connected with a belt buckle (12) or a belt strap loop (60), whereby a magnet (23) and a magnetic field sensor (28) are disposed on the holder (10) and the connector (11), and the relative movement between magnet (23) and magnetic field sensor (28) caused by displacement of the connector (11) relative to the holder (10), which displacement is effected by tension force acting on the safety belt, is converted into a signal that corresponds to the acting belt force, characterized in that the holder (10) has a T-shaped head (16) with arms (17) that extend laterally relative to its longitudinal axis, and the connector (11) is provided with abutments (19) positioned opposite the arms (17) of the holder (10), and in that at the outer longitudinal sides of head (10) and connector (11), at least one spring (21) is provided that is disposed between the arm (17) of the holder (10) and the abutment (19) of the connector, and the spring (21) counteracts a tension force of the safety belt (60) or belt buckle.

2. Fastening arrangement according to claim 1, characterized in that the connector (11) comprises two plates (18) that are parallel to one another and enclose or encase between them the T-shaped head (16) of the holder (10), including the arms (17) thereof, and the abutments formed on the connector (11) for the springs (21) are formed by connecting flanges (19) that are disposed perpendicular to the plane of the plates (19).
3. Fastening arrangement according to claim 1 or 2, characterized in that the spring (21) is a compression spring that is supported between the arm (17) of the holder (10) and the abutment (19) of the connector (11).
4. Fastening arrangement according to claim 3, characterized in that the connector (11) has a bearing surface (11a) against which the T-shaped head (16) of the holder (10) is supported under the effect of the springs (21).
5. Fastening arrangement according to claim 3 or 4, characterized in that formed on the arms (17) of the T-shaped head (16), and on the abutments (19) of the connector (11), are guide members

(20) that project in the direction of extension of the compression springs (21).

5 6. Fastening arrangement according to one of the claims 1 to 5, characterized in that the connector (11) is connected with the buckle housing (14) of a belt buckle (12) via a connecting means (15).

10 7. Fastening arrangement according to one of the claims 1 to 5, characterized in that the connector (11) is a monolithic component of the buckle housing (14).

15 8. Fastening arrangement according to claims 1 and 7, characterized in that the buckle housing (14), which is U-shaped with a base plate (40) and laterally-upright legs (41), for forming the monolithic connector (11) is provided with an axial extension portion (42) of its base plate (40), at the end of which are formed the abutments (19) accompanied by the formation of a space (43) relative to the U-legs (41).

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9. Fastening arrangement according to claim 8, characterized in that the arms (17) of the holder (10), including the arrangement of the springs (21), are disposed in the space (43).

5 10. Fastening arrangement according to claim 8 or 9, characterized in that the holder (10) is secured on the base plate (40) of the buckle housing (14) so as to be relatively movable thereto.

10 11. Fastening arrangement according to one of the claims 1 to 10, characterized in that the holder (10) is embodied as a rigid component.

15 12. Fastening arrangement according to one of the claims 1 to 10, characterized in that the holder (10) is embodied as a flexible cable holder.

20 13. Fastening arrangement according to one of the claims 1 to 11, characterized in that the magnet comprises a bar magnet (23) that is oriented in the longitudinal direction of holder (10) and connector (11) and is mounted on the inner side of the connector (11) that faces the T-shaped head (16) of the holder (10), and the magnetic field sensor (28) is mounted on the head

(16) of the holder (10) such that the longitudinal axis of the sensor extends at right angles to the longitudinal axis of the bar magnet (23) and within the magnetic field thereof.

5 14. Fastening arrangement according to claim 2 and 13, characterized in that the bar magnet (23) is mounted on the one plate (16) of the connector (11), and on the other plate (16) there is formed a portion (22) that spans the magnetic field sensor (28).

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15 15. Fastening arrangement according to one of the claims 1 to 11, characterized in that the magnet comprises a bar magnet (23) that is oriented in the longitudinal direction of holder (10) and connector (11) and is rotatably mounted on the connector (11), and the magnetic field sensor (28), which detects the change in position of the bar magnet (23), is disposed on the connector (11), and in that the holder (10), during its displacement relative to the connector (11), deflects the bar magnet (23) out of its orientation in the longitudinal axis of the connector (11).

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16. Fastening arrangement according to claim 15, characterized in that the head (16) of the holder (10) engages against the bar

magnet (23), which is rotatably mounted on the connector (11),
via an articulated lever arm (33, 34).

17. Fastening arrangement according to one of the claims 7 to 10,
5 characterized in that the magnetic field sensor is mounted on
the holder (10), and the magnet is embodied in the form of a
bridge (44), which spans the base plate (40) of the buckle
housing (14) and is fixed in position on the lateral U-legs (41) of
the buckle housing (14), and is disposed in such a way that the
10 magnetic field sensor is disposed below the magnet bridge (44).

18. Fastening arrangement according to claim 17, characterized in
that the magnetic field sensor is fixed in position on the holder
(10) via a sealing compound that encases it.

15 19. Fastening arrangement according to one of the claims 1 to 18,
characterized in that disposed between holder (10) and buckle
housing (14) is a compensation spring (50) that is respectively
supported on the holder and buckle housing and that, without a
20 tension force acting on the buckle housing (14), pre-stresses the
buckle housing (14) relative to the holder (10) against the nearly
relaxed spring (21) with a spring force that is set low.

- 5 20. Fastening arrangement according to claim 19, characterized in that the compensation spring (50) is embodied as a pre-bent flat spring that via a central portion (51) is fixed in position on the buckle housing (14), and the lateral outer ends (52) of which act upon the holder (10) with pre-stress, and when relative displacement of the buckle housing (14) with connector (11) relative to the holder (10) is effected, come free from the holder (10) due to the tension force that engages the buckle housing (14).
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21. Fastening arrangement according to one of the claims 1 to 20, characterized in that the holder (10) is embodied in two parts with a holding portion (10a) that is to be secured to the vehicle and with a fitting portion (10b) that is provided with the lateral arms (17) and cooperates with the connector (11).
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22. Fastening arrangement according to one of the claims 1 to 21, characterized in that a belt strap loop (60) engages directly on the connector (11).
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